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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/668,938	09/25/2000	Volker Rasche	PHD99.130US	2720
24737	7590	12/22/2003	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			KAO, CHIH CHENG G	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/668,938

Applicant(s)

RASCHE ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10,18,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1 and 18 are objected to because of lack of antecedent problems that appear to be draft errors: (claim 1, lines 6-7, “the x-ray positions”) and (claim 18, lines 5-6, “the x-ray positions”).

The objections may be obviated by the following corrections: (claim 1, inserting - x-ray- - after “different” in line 4) and (claim 18, inserting - x-ray- - after “different” in line 4).

For purposes of examination, the claim has been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 5, 7, 18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hounsfield (US Patent 3952201) in view of Fujita (US Patent 5482042).

3. With regards to claim 1, Hounsfield discloses a method for acquiring an image data set of a moving organ (Abstract, lines 1-3) comprising: defining a plurality of different positions of an

x-ray device (col. 1, lines 30-34) comprising an x-ray source (Fig. 1, #1) and an x-ray detector (Fig. 1, #4) in a common plane (col. 1, lines 32-34), detecting a motion signal of a body organ including a low-motion phase (col. 1, lines 39-42, and Figs. 2(a)-2(c)), simultaneously with detection of the motion signal, successively moving the device to all x-rays positions in an x-ray cycle and acquiring a plurality of projection data sets when the x-ray device is in a respective one of the positions (Figs. 2(a)-2(c)), successively completing a plurality of x-ray cycles (Fig. 2(c)), controlling movement of the x-ray device (col. 3, lines 35-49), and using projection data sets acquired during low-motion phases for formation of the image data set (Figs. 2(a)-2(c)).

However, Hounsfield does not disclose acquiring a three-dimensional image.

Fujita teaches acquiring a three-dimensional image (col. 1, lines 26-39).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the method of Hounsfield with the three-dimensional imaging of Fujita, since one would be motivated to use three-dimensional imaging to see a volumetric image of the object of interest as implied from Fujita (col. 1, lines 26-39).

4. With regards to claim 2, Hounsfield further discloses wherein only projection data sets acquired during the same motion phases are selected and used (Figs. 2(a)-2(c)).

5. With regards to claim 4, Hounsfield further discloses wherein the x-ray device is controlled such that projection data is acquired only during low-motion phases (Figs. 2(a)-2(c)).

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6. With regards to claim 5, Hounsfield further discloses wherein the x-ray device is on exclusively during low-motion phases of the body organ (Figs. 2(a)-2(c)).

7. With regards to claim 7, Hounsfield further discloses a cardiac motion signal (Abstract and Figs. 2(a)-2(c)).

8. With regards to claim 18, Hounsfield discloses a method for acquiring an image data set of a moving organ (Abstract, lines 1-3) comprising: defining a plurality of different positions of an x-ray device (col. 1, lines 30-34) comprising an x-ray source (Fig. 1, #1) and an x-ray detector (Fig. 1, #4) in a common plane (col. 1, lines 32-34), detecting a motion signal of a body organ including a low-motion phase (col. 1, lines 39-42, and Figs. 2(a)-2(c)), simultaneously with detection of the motion signal, moving the x-ray device to each of the x-ray positions and when the x-ray device is in each position, determining whether a low-motion phase is present and if so, acquiring a projection data set (Figs. 2(a)-2(c)), continuing movement to all positions until a projection data set is acquired in each position (Fig. 2(c)) and using projection data sets acquired during low-motion phases for formation of the image data set (Figs. 2(a)-2(c)).

However, Hounsfield does not disclose acquiring a three-dimensional image.

Fujita teaches acquiring a three-dimensional image (col. 1, lines 26-39).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the method of Hounsfield with the three-dimensional imaging of Fujita, since one would be motivated to use three-dimensional imaging to see a volumetric image of the object of interest as implied from Fujita (col. 1, lines 26-39).

9. With regards to claim 20, Hounsfield further discloses correlating presence of the x-ray device and acquisition of the projection data sets based on the motion signal such that the x-ray device is present in a new x-ray position at a fixed instant within a given phase of motion (Figs. 2(a)-2(c)), and then acquiring at the same time a correction data set (Fig. 2(a)) so that all projection data sets are acquired at the same instant within a phase of motion (Fig. 2(c)).

10. With regards to claim 21, Hounsfield further discloses defining a sequence and moving the x-ray device through each of the positions (Fig. 2(c)).

11. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hounsfield in view of Fujita as applied to claims 1 and 7 above, and further in view of Richey et al. (US Patent 4547892).

Hounsfield in view of Fujita suggests a method as recited above.

However, Hounsfield does not disclose a respiratory and cardiac motion signal.

Richey et al. teaches a respiratory and cardiac motion signal (Claims 1 and 7).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Hounsfield in view of Fujita with the respiratory and cardiac motion signal of Richey et al., since one would be motivated use this to obtain images that are not blurred by motion as implied from Richey et al. (col. 5, lines 55-61).

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12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hounsfield in view of Fujita and Richey et al. as applied to claim 8 above, and further in view of Koka et al. (US Patent 4751644).

Hounsfield in view of Fujita and Richey et al. suggests a method as recited above.

However, Hounsfield does not disclose a respiratory motion signal to correct projection data sets acquired in different respiratory motions phases.

Koka et al. teaches a motion signal to correct projection data sets acquired in different motion phases (col. 3, lines 43-51).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Hounsfield in view of Fujita and Richey et al. with the correction of projection data sets of Koka et al., since one would be motivated use this to obtain images for a selected phase as shown by Koka et al. (col. 3, lines 43-51).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Hounsfield in view of Fujita, Richey et al., and Koka et al. with the respiratory motion signal correcting images, since respiratory and cardiac motion signals are considered art recognized equivalents in that they both relate to motions that can create image distortions as implied from Richey et al. (col. 5, lines 55-61). It would have been within ordinary skill in the art to substitute one type of signal for another. One would be motivated to use a respiratory signal for better images without the blurriness due to motion as implied from Richey et al. (col. 5, lines 55-61).

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13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hounsfield in view of Fujita and Richey et al. as applied to claim 6 above, and further in view of Suzuki et al. (US Patent 4878499).

Hounsfield in view of Fujita and Richey et al. suggests a method as recited above.

However, Hounsfield does not disclose further informing the patient that a desired respiratory motion phase has been reached based on a respiratory motion signal.

Suzuki et al. teaches further informing the patient that a desired respiratory motion phase has been reached based on a respiratory motion signal (col. 5, lines 25-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Hounsfield in view of Fujita and Richey et al. with the informing of Suzuki et al., since one would be motivated use this to ensure that everyone knows that the best image is being created as implied from Suzuki et al. (col. 5, lines 25-40).

Allowable Subject Matter

14. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:
With regards to claim 19, prior art does not disclose or fairly suggest a method for acquiring a three-dimensional image data set of a moving organ including the step maintaining the x-ray device in each x-ray position when the low-motion phase is not present and continuously

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determining whether the low motion phase is present until a positive determination is obtained and thereafter acquiring the projection data set and then moving the x-ray device to another x-ray position, as specified in combination with all the limitations in the claim and base claim.

Response to Arguments

15. Applicant's arguments with respect to claims 1, 2, 4-10, 18, 20, and 21 have been considered but are moot in view of the new ground(s) of rejection.

Fujita still applies for its disclosure of three-dimensional imaging in computed tomography.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk



DAVID V. BRUNO
PRIMARY EXAMINER